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EXAMINER

CHOI, EUNSOOK

ART UNIT

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2467

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10/09/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/617,353	Applicant(s) UMAYABASHI ET AL.	
	Examiner EUNSOOK CHOI	Art Unit 2467	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5-12,18-22,49-51,56,57,60,65-82,84,89,90,93 and 98-109 is/are pending in the application.
- 4a) Of the above claim(s) 98-109 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1,2,5-12,18-22,49-51,56,57,60,65-75,77-80,82,84,89,90 and 93 is/are rejected.
- 7) ☐ Claim(s) 76 and 81 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 4/3/2009 have been fully considered but they are not persuasive.
- Applicant argues on page 22, regarding restriction requirement, that Applicant hereby requests reconsideration of the restriction requirement under 37 C.F.R. § 1.143 because the Examiner has not adequately detailed how the subcombinations have different utility or are independent and distinct as required by the MPEP. The previous office action dated 12/12/2008 explicitly listed on page 2 with different utilities for each groups of subcombinations. As in the previous office action, claims 1, 2, 5-12, 18-22, 49-51, 56, 57, 60, 65-82, 84, 89, 90, and 93 of Group I are drawn to adding an expansion tag to a data frame, claims 98-104 of Group II are drawn to an expansion tag storage region comprising a plurality of expansion tags, and claims 105-109 are drawn to a VLAN tag comprising a priority Tag. The groups are disclosed as usable together in a single combination, and which can be shown to be separately usable.
- Applicant argues on page 23, regarding 35 U.S.C. 101 rejection for claims 82, 84, 89, 90, and 93, that claims directed to storage media storing computer programs are well known and commonly accepted in the art, since the term program connotes a process and since such storage media are objects of manufacture. However, claims 82, 84, 89, 90, and 93 are directed to a frame transfer program not to how applicant

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argued as underlined above. "a frame transfer program executed in a processor" does not overcome 35 U.S.C. 101 rejection.

- Applicant has concluded on page 25, regarding 35 U.S.C. 102 rejection in view of Jha, "while the frames may be forwarded, they are forwarded to the network itself, not to the egress node. While in the network, Jha discloses that the frame will follow the path dictated by the added MPLS identification field 102, Jha discloses that the frame will follow the path dictated by the added MPLS identification field 102".

Examiner respectfully disagrees. Jha's MPLS label is used to reach the egress edge node. Jha explicitly teaches in Col. 4 Lines 59-66, an example of Fig. 5, "a frame in MPLS may then be transferred along the LSP 144C per the MPLS labels to the edge router 136B. The edge router 136b may operate as an egress node from the MPLS network 132 for the frame".

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 5-12, 18-22, 84, 89, 90, and 93 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Claim 1 recites "said node" on line 8 is indefinite because it is unclear which node it is referring to, "one or more nodes" or "an egress edge node".
- Claims 84, 89, 90, and 93 recite "comprising" on line 3 and line 4 of each claim which are indefinite because they are unclear where the bodies of claims start.

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- Claim 90 recites “receiving an expansion frame with an expansion tag including forwarding information of an ingress edge node which comprises received said frame added to said data frame to transfer the frame” is indefinite because it is confusing how forwarding information comprises received said frame added to said data frame to transfer the frame.
- Claim 90 recites the limitations “received said frame”, “said data frame, and “the frame” which are indefinite whether they are the same frame.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 82, 84, 89, 90, and 93 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims 82, 84, 89, 90, and 93 recite “a frame transfer program executed on in a processor” where a frame transfer program could be directed to a program per se, note that the network in the preamble is nothing more than a description of where the frame transfer program is to be located, the adding and receiving function is the function of the program. The body of the claim, i.e. the adding and receiving function only breathes life into the frame transfer program and not to the network. As such, these claims are directed to program per se which is non-statutory.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 2, 49, 51, 56, 60, 65, 67, 69, 82, 84, 89, and 93 are rejected under 35

U.S.C. 102(e) as being anticipated by Jha (US 7,161,946).

Regarding claims 82, 49, and 56, Jha teaches adding, to said data frame (**Fig. 6, 146-Receive frame**), an expansion tag (**Fig. 6, 148-Create MPLS Protocol ID field and MPLS LABEL Stack Field in frame**) containing information about forwarding to an egress edge node to said destination to make an expansion frame, and receiving said expansion frame to transfer the frame (**Fig. 6, 152-Forward frame into MPLS network per MPLS LABEL**) to a path to said egress node based on said forwarding information of said expansion tag (**Col. 5 Lines 19-32 The frame in MPLS format may then be forwarded into the MPLS network 132 per the MPLS labels 112 for transmission**).

Regarding claims 2, 51, 60, and 84, Jha teaches the limitations as applied to claim 82 above above. Jha teaches information about customers to which said source and said destination belong (**Fig. 3, COS-Class of Service**).

Regarding claim 89 and 93, Jha teaches receiving (**Fig. 7 156-Receive frame at Egress router**) an expansion frame with an expansion tag (**Fig. 3 112**) including information about forwarding to an egress edge node to said destination (**Fig. 3 114 and Col. 3 Lines 35-52 The labels 114 of each header 112 may be used with a Label Switched Path through an MPLS network**), customer information (**Fig. 3 COS-**

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Class of Service) added to applied said data frame to transfer the frame to a path to said egress node (**Fig. 7 blocks 154 and 156 and Col. 5 Lines 34-45 The frame in MPLS format may be transmitted through the MPLS network 132 for reception by an egress edge router 136).**

Regarding claims 65 and 69, Jha teaches the limitations for claim 49 as applied above. Jha teaches a frame attribute detector for extracting frame attribute information of applied said data frame to an input port of the node; an expansion tag generator for generating said expansion tag based on said frame attribute information, and a frame converter for adding said generated said expansion tag to applied said data frame to convert the frame into an expansion frame (**Fig. 8 a circuit implementing the insertion and extraction methods and Col. 5 Lines 47-60 the port 138 interfacing to a customer for receiving and sending frames of data).**

Regarding claim 67, Jha teaches the limitations for claim 65 as applied above. Jha teaches an Ethernet frame, inserts said expansion tag after said destination MAC address (**Fig. 3).**

8. Claims 50 and 90 are rejected under 35 U.S.C. 102(e) as being anticipated by Lamberton et al. (US 20030154259)

Regarding claim 50 and 90, Lamberton teaches frame processing element which adds, to said data, an expansion tag ([0008] **an additional field called tag header or Q-tag which contains a VLAN identifier, VID**) containing information (**VID**) about forwarding of an ingress node which has received said frame to make an expansion frame ([0028] **forwarding traffic data units including a respective VLAN identifier),**

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when applied said data frame is a frame to be broadcast, and switch element ([0008] a **VLAN-aware Ethernet bridge has the ability to perform frame switching based on the VID**) which receives said expansion frame to transfer the frame to a path to at least one node on said network based on said forwarding information of said expansion tag (Fig. 4-6 and [0008] a **VLAN is used for the layer 2 broadcasting and forwarding of frames within a sub-group of users**).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1, 5-7, 9, 11, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jha (US 7,161,946) in view of Oguchiet al. (US 20020067725).

Regarding claim 1, Jha teaches adding, to said data frame (**Fig. 6, 146-Receive frame**), an expansion tag (**Fig. 6, 148-Create MPLS Protocol ID field and MPLS LABEL Stack Field in frame**) containing information about forwarding to an egress edge node to said destination to make an expansion frame; and relaying said data frame (**Fig. 6, 152-Forward frame into MPLS network per MPLS LABEL**) based on said forwarding information of said added expansion tag to transfer the frame to said egress node by each node on said network (**Col. 5 Lines 19-32 The frame in MPLS format may then be forwarded into the MPLS network 132 per the MPLS labels**

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112 for transmission). However, Jha does not explicitly teach said node relaying said data frame by using said expansion tag to determine an output port without conducting an MAC address search. Oguchiet teaches an example in an MPLS system, **[0055] when the edge router receives a packet with a label from the ISP network NW1, the next hop router and the output physical port are determined by the label, using a label table**. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use said expansion tag to determine an output port without conducting an MAC address search in order to reduce a process of route retrieval and to relay a packet at a high speed ([0034], Oguchiet).

Regarding claim 5, Jha and Oguchiet teach the limitations for claim 1 as applied above. Jha teaches at an ingress node of the source of said data frame on said network, said expansion tag is generated based on network information of said data frame and said generated said expansion tag is added to make said expansion frame **(Fig. 3 and Col. 3 Lines 35-52 The labels 114 of each header 112 may be used with a Label Switched Path through an MPLS network)**.

Regarding claim 6, Jha and Oguchiet teach the limitations for claim 1 as applied above. Jha teaches at said egress node on said network, said expansion tag is deleted from said expansion frame to make said data frame and said data frame is transferred to said transfer destination **(Fig. 7, 158 and Col. 5 Lines 34-45 The egress edge router 136 may remove the MPLS protocol identification field 102 and the MPLS label stack 104 from the frame)**.

Regarding Claim 7, Jha and Oguchiet teach the limitations for claim 1 as applied above. Jha teaches said data frame comprises an Ethernet frame (**Fig. 3**).

Regarding Claim 9, Jha and Oguchiet teach the limitations for claim 7 as applied above. Jha teaches said expansion tag is inserted immediately after a source MAC address of said Ethernet frame to make said expansion frame (**Fig. 3**).

Regarding claim 11, Jha and Oguchiet teach the limitations for claim 1 as applied above. Jha teaches identification information comprising identifier information of said egress node or label information for reaching said egress node (**Fig. 3 114 Label**).

Regarding claim 18, Jha and Oguchiet teach the limitations for claim 1 as applied above. Jha teaches a length of said expansion tag is 32 bits and a length of a storage region of said expansion tag is an integral multiple of 32 bits (**Fig. 3 a multiple of MPLS labels and each of them has 32 bits**).

11. Claims 57, 66, 71, 77-80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jha (US 7,161,946) as applied to claim 49, and in view of Hama (US PG PUB 20040202171).

Regarding claim 77, however, Jha does not teach said ingress node, a core node, and said egress node have table which makes an address of said transfer destination and identification information of said egress node and a table which makes identification information of said egress node and output port information correspond with each other. Hama teaches in **Fig. 4, Fig. 10B, Fig. 11A-11C, and Fig. 19** VPN Label and routing tables of edge (PE) routers. It would have been obvious for one of

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ordinary skill in the art at the time of the invention was made to combine with Hama's tables in order to construct access networks using VLAN-compatible switches ([0032], Hama).

Regarding claim 57, Jha teaches identification information comprising identifier information of said egress node or label information for reaching said egress node (**Fig. 3**). However, Jha does not teach Hama teaches additionally identifier information of said ingress node (**Fig. 12, PKT2, IP Forwarding Label and VPN Identification Label** (identifier information of said ingress node)). It would have been obvious for one of ordinary skill in the art at the time of the invention was made to combine with Hama's identifier in order to construct access networks using VLAN-compatible switches ([0032], Hama).

Regarding claim 78, Hama teaches in Fig. 4, 10B, 11A-11C, and 19 VPN Label and routing tables of edge (PE) routers (said ingress node, a core node, and said egress node have table which makes an address of said transfer destination and identification information of said egress node and a table which makes identification information of said egress node and output port information correspond with each other). Hama inherently teaches in paragraphs [0100]-[0102] upon receiving the ARP packet (broadcast packet), the edge router PE A 211 creates a copy of the packet and directs it through the other edge routers PE B 212 and PE C 213 (a table which makes identification information of said ingress node and one or a plurality of output port information correspond with each other).

Regarding claim 79, Hama teaches in Fig. 13 a VLAN ID (an existing VLAN tag value or a group identifier obtained by grouping a part of existing VLAN tags or a group identifier obtained by grouping all the existing VLAN tags).

Regarding claim 80, Hama teaches in Fig. 4, 10B, 11A-11C, and 19 VPN Label and routing tables of edge (PE) routers (said ingress node, a core node, and said egress node have table which makes an address of said transfer destination and identification information of said egress node and a table which makes identification information of said egress node and output port information correspond with each other). Hama further teaches Fig. 2 and paragraph [0072] a VPN identification unit identifies a VPN by referring to the VID of the received VLAN packet and inputs the packet to a tag/label converter (subrouter) that corresponds to this VPN. The subrouter corresponding to the identified VPN has a table which already stores the correspondence between VLAN and VPN identifiers (VPN labels) that specify VPNs to which the VLANs specified by the VIDs belong. The edge router further includes a route decision unit for deciding beforehand a route to a receive-side edge router using a routing protocol and stores a forwarding label, which specifies the decided route, in an MPLS network routing table (forwarding-label memory) in correspondence with the IP address of the receive-side edge router (customer information of said transfer destination correspond with each other).

Regarding claim 66, Jha teaches the limitations for claim 65 as applied above. Hama teaches in Fig. 4 a table storing correspondence between VLAN IDs and VPN identifiers (a correspondence information table in which information about

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correspondence between frame attribute information generated by said frame attribute detector and network information). Hama teaches in Fig. 2, Fig. 4, and paragraph [0072] a VPN identification unit identifies a VPN by referring to the VID of the received VLAN packet and inputs the packet to a tag/label converter that corresponds to this VPN (after reading network information corresponding to said frame attribute information, generates an expansion tag based on said network information).

Regarding claim 71, Hama teaches in Fig 2, Fig. 19, Fig 22, and paragraph [0015] a terminal device on the transmitting side is connected to the edge router 1 via a LAN or the like, and a terminal device at the destination having an IP address 10.1.100.0/24 is connected to the edge router 5 via a router and a LAN. If the two terminal devices are to communicate, an LSP (Label Switched Path) is set up between the edge routers 1, 5, to which the terminals are connected, in accordance with an LDP (Label Distribution Protocol) and through use of a label, and label tables 1a to 4a are formed in the MPLS routers 1 to 4, respectively, that form this LSP (receiving an expansion frame transferred from said frame processing element to obtain output port information based on network information stored in an expansion tag in said expansion frame, and receiving an expansion frame and said output port information transferred from said frame forwarding unit to output said frame with an expansion tag to a port as set forth in said output port information).

12. Claims 8, 10, 12, 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jha (US 7,161,946) modified by Oguchiet al. (US 20020067725) as applied to claim 1, and further in view of Hama (US PG PUB 20040202171).

Regarding claim 8, however, Jha and Oguchiet do not teach a VLAN tag of said Ethernet frame is replaced by said expansion tag to make said expansion frame. Hama teaches in **Fig. 2 and Fig. 3** a VLAN tag of said Ethernet frame is replaced by MPLS VPN labels. It would have been obvious for one of ordinary skill in the art at the time of the invention was made to have a VLAN tag of said Ethernet frame is replaced by said expansion tag to make said expansion frame in order to construct access networks using VLAN-compatible switches ([0032], Hama).

Regarding claim 10, Hama teaches when said Ethernet frame fails to have said VLAN tag, said expansion tag is added between a source MAC address and Ethernet attribute information to make said expansion frame (**Fig. 13, step 30 and paragraph [0095]** when a packet arrives as an input, the transmit-side edge router checks to see whether the packet has been tagged. Since the packet is an MPLS packet if it has not been tagged, the edge router executes ordinary MPLS processing).

Regarding claims 12, Jha teaches identification information comprising identifier information of said egress node or label information for reaching said egress node (**Fig. 3**). Hama teaches additionally identifier information of said ingress node (**Fig. 12, PKT2, IP Forwarding Label** (identifier information of said egress node or label information for reaching said egress node) **and VPN Identification Label** (identifier information of said ingress node)).

Regarding claim 19, Hama teaches in **Fig. 4, Fig. 10B, Fig. 11A-11C, and Fig. 19** VPN Label and routing tables of edge (PE) routers (said ingress node, a core node, and said egress node have table which makes an address of said transfer destination

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and identification information of said egress node and a table which makes identification information of said egress node and output port information correspond with each other).

Regarding claims 20, Hama teaches in Fig. 4, 10B, 11A-11C, and 19 VPN Label and routing tables of edge (PE) routers (said ingress node, a core node, and said egress node have table which makes an address of said transfer destination and identification information of said egress node and a table which makes identification information of said egress node and output port information correspond with each other). Hama inherently teaches in paragraphs [0100]-[0102] upon receiving the ARP packet (broadcast packet), the edge router PE A 211 creates a copy of the packet and directs it through the other edge routers PE B 212 and PE C 213 (a table which makes identification information of said ingress node and one or a plurality of output port information correspond with each other).

Regarding claim 21, Hama teaches in Fig. 13 a VLAN ID (an existing VLAN tag value or a group identifier obtained by grouping a part of existing VLAN tags or a group identifier obtained by grouping all the existing VLAN tags).

Regarding claim 22, Hama teaches in Fig. 4, 10B, 11A-11C, and 19 VPN Label and routing tables of edge (PE) routers (said ingress node, a core node, and said egress node have table which makes an address of said transfer destination and identification information of said egress node and a table which makes identification information of said egress node and output port information correspond with each other). Hama further teaches Fig. 2 and paragraph [0072] a VPN identification unit

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identifies a VPN by referring to the VID of the received VLAN packet and inputs the packet to a tag/label converter (subrouter) that corresponds to this VPN. The subrouter corresponding to the identified VPN has a table which already stores the correspondence between VLAN and VPN identifiers (VPN labels) that specify VPNs to which the VLANs specified by the VIDs belong. The edge router further includes a route decision unit for deciding beforehand a route to a receive-side edge router using a routing protocol and stores a forwarding label, which specifies the decided route, in an MPLS network routing table (forwarding-label memory) in correspondence with the IP address of the receive-side edge router (customer information of said transfer destination correspond with each other).

13. Claims 68 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jha (US 7,161,946) as applied to claims 65 and 69 above, and in view of Chase (US Patent 7257118).

Regarding claims 68 and 70, Jha teaches an expansion tag separation unit (**Fig. 8**). However, Jha does not expressly teach recalculating an FCS of said Ethernet frame transferred from the expansion tag separation unit to rewrite the FCS. Chase teaches in Fig. 2, Fig. 3, and Col. 1 Lines 64-67 the remainder of the frame relay frame is included and a frame check sum (FCS) is computed. The frame is then passed down to the physical layer and transmitted to the SPN. It would have been obvious for one of ordinary skill in the art at the time of the invention was made to recalculate an FCS of

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said Ethernet frame transferred from the expansion tag separation unit to rewrite the FCS in order to output proper frames for different interfaces.

14. Claims 72-76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jha (US 7,161,946) modified by Hama (US PG PUB 20040202171) as applied to claim 71 above, and further in view of Kompella (US Patent 7,136,374).

Regarding claim 72, Hama teaches in Fig 2, Fig. 19, Fig 22, and paragraph [0015] a terminal device on the transmitting side is connected to the edge router 1 via a LAN or the like, and a terminal device at the destination having an IP address 10.1.100.0/24 is connected to the edge router 5 via a router and a LAN. If the two terminal devices are to communicate, an LSP (Label Switched Path) is set up between the edge routers 1, 5, to which the terminals are connected, in accordance with an LDP (Label Distribution Protocol) and through use of a label, and label tables 1a to 4a are formed in the MPLS routers 1 to 4, respectively, that form this LSP (extracting forwarding information from an expansion tag of said expansion frame received). However, Jha and Hama do not expressly teach an expansion tag information table indicative of correspondence between forwarding information in an expansion tag of said expansion frame received and output port information, and referring to said expansion tag information table to obtain output port information from the forwarding information. Kompella teaches in Fig. 6, Fig. 9, and Fig.10 LSP in MPLS domain and information stored at a provider/customer edge device. It would have been obvious for one of ordinary skill in the art at the time of the invention was made to have an

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expansion tag information table indicative of correspondence between forwarding information and output port information, and to refer to the expansion tag information table to obtain output port information from the forwarding information in order to minimize the number of routes that need to be stored on the service provider's routers and/or to support multicasting (Col. 3 Lines 35-42 Kompella).

Regarding claim 73, Jha, Hama, and Kompella teach the limitations for claim 72 as applied above. Jha teaches identifier information of said egress node or label information for reaching said egress node (Fig. 3 112 Label).

Regarding claims 74 and 75, Jha, Hama and Kompella teach the limitations for claim 72 as applied above. Hama teaches in Fig. 12 and paragraphs [0005], and [0101]-[0104] by grouping, broadcast frames now need only be relayed within the group (forwarding information is identification information composed of identifier information of said egress node or label information for reaching said egress node and identifier information of said ingress node).

Allowable Subject Matter

15. Claims 76 and 81 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to EUNSOOK CHOI whose telephone number is (571)270-1822. The examiner can normally be reached on Monday-Friday 8:00-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pankaj Kumar can be reached on 571-272-3011. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. C./

Examiner, Art Unit 2467

/Hong Cho/

Primary Examiner, Art Unit 2467